

Showers are an important interface for human interaction with microbes through inhalation of aerosols, and showerhead waters have been implicated in disease. Although opportunistic pathogens commonly are cultured from shower facilities, there is little knowledge of either their prevalence or the nature of other microorganisms that may be delivered during shower usage. Sequences representative of non-tuberculous mycobacteria (NTM) and other opportunistic human pathogens are enriched to high levels in many showerhead biofilms, >100-fold above background water contents. We conclude that showerheads may present a significant potential exposure to aerosolized microbes, including documented opportunistic pathogens. The health risk associated with shower-head microbiota needs investigation in persons with compromised immune or pulmonary systems. Shower usage provides a source for repeated exposure to microbes through aerosolization and/or direct contact. The inside of a showerhead is a specific niche that is moist, warm, dark, and frequently replenished with low-level nutrient resources and seed organisms. Biofilms form on interior shower-head surfaces and potentially expose the user to a cohort of unknown, aerosolized microorganisms. Shower aerosol particles can be sufficiently small to carry bacteria deep into the airways (1). Pulmonary disease and other health risks such as asthma, bronchitis, and hypersensitivity pneumonitis are associated with inhalation of both viable bacteria and inviable microorganisms or their components. These organisms commonly occur in municipal waters and several studies have traced both *Legionella pneumophila* and *Mycobacterium avium* infections in hospitalized patients to microbes in their home showers. One of the species present in the showerhead film in this study was **Blastomonas** species, a Gram-negative, strictly aerobic and non-spore-forming bacteria genus from the family of Sphingomonadaceae. **Pseudomonas** species have also been isolated from showerhead films, along with **Sphingomonas** species (Feazel et al., 2009)

Pseudomonas koreensis – Gram-negative, non-spore-forming and motile bacteria found in soil and water. Not very much known about this species in general, although many pseudomonas strains can be opportunistic pathogens.

Pseudomonas putida – rod shaped, gram negative motile bacteria. Found in most soil and water habitats. Uncommon cause of skin and soft tissue infections. It is often associated with trauma or immunocompromised state.

Previously, *Pseudomonas putida* was considered a low-virulence pathogen and was recognized as a rare cause of bacteremia. Recently, however, multidrug-resistant *P. putida* isolates have emerged, causing difficult-to-treat nosocomial infections in seriously ill patients. Over the last three decades, this organism has been increasingly encountered as a significant human pathogen in hospital settings and in immunocompromised hosts or patients with invasive medical devices in place.